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Abstract

THE TREATMENT OF EFFLUENTS

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For several years the French Atomic Energy Commission has been studying with interest problems presented by radio-active effluents.

Since high activities have not yet received a definite solution we will deal only, in this paper, with the achievements and research concerning low and medium activity effluents.

In the field fo the achievements, we may mention the various effluent treatment stations which have been built in France ; a brief list will be given together with an outline of their main new feactures.

Thus in particular the latest treatment stations put into operation (Grenoble, Fontenay-aux-Roses, Cadarache) will be presented.

From all these recent achievements three subjects will be dealt with in more detail

1 - The workshop for treating with bitumen the sludge obtained after concentration of radio-nucleides.

2 - The workshop for treating radioactive solid waste by incineration.

3 - A unit for concentrating radio-active liquid effluents by evaporation.

In the field of research, several topics have been undertaken, a list

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will be given.

In most cases the research concerns the concentration of radionucleides with a view to a practical and low cost storage, a concentration involving an efficient decontamination of the aqueous liquids in the best possible economic conditions.

For improving the treatments leading to the concentration of nucleides, our research has naturally been concerned with perfecting the treatments used in France : coprecipitation and evaporation.

In our work we have taken into account in particular two conditions laid down in the French Centres.

1 - A very strict sorting out of the effluents at their source in order to limit in each category the volume of liquid to be dealt with.

2 - The necessity for a very complete decontamination due to the high population density in our country.

In the last past we present two original methods for treating liquid effluents.

1 - The use of ion-exchange resins for liquids containing relatively many salts.

The resins are used in the sodium form ; the regeneration is carried out using a sodium salt solution which, after decontamination by coprecipitation is used again. With this process it is possible to use a smaller volume of sludge.

2 - The use of a natural evaporator.

This process uses atmospheric air which is not saturated with water vapour and which is at a normal temperature, in order to extract water from the aqueous effluents.